Agenda



Welcome Dan Dumbacher, NASA Deputy Associate Administrator

for Exploration Systems

Human Exploration and Operations Mission Directorate

SLS Program Overview Todd May, SLS Program Manager

Marshall Space Flight Center

NRA Intent and Schedule Chris Crumbly, Chairperson

Marshall Space Flight Center

NRA Summary Chris Crumbly, Chairperson

◆ Break All

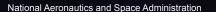
NRA Model Contract Kellie Craig, Contracting Officer

Marshall Space Flight Center

Questions and Answers All

♦ Networking
All







Space Launch System (SLS) Program Overview NASA Research Announcement (NRA) Advanced Booster (AB) Engineering Demonstration and Risk Reduction (EDRR) Industry Day













Todd A. May, SLS Program Manager NASA Marshall Space Flight Center December 15, 2011

NASA Authorization Act of 2010



- ◆ The Congress approved and the President signed the National Aeronautics and Space Administration Authorization Act of 2010.
 - Bipartisan support for human exploration beyond low-Earth orbit (LEO)

The Law authorizes:

- Extension of the International Space Station (ISS) until at least 2020
- Strong support for a commercial space transportation industry
- Development of Orion Multi-Purpose Crew
 Vehicle (MPCV) and heavy lift launch capabilities
- A "flexible path" approach to space exploration, opening up vast opportunities including near-Earth asteroids and Mars
- New space technology investments to increase the capabilities beyond Earth orbit (BEO)



This rocket is key to implementing the plan laid out by President Obama and Congress in the bipartisan 2010 NASA Authorization Act.

— NASA Administrator Charles Bolden September 14, 2011



Delivering on the Laws of the Land ... and Obeying the Laws of Physics

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SLS Is a National Asset or Multiple Stakeholders and Partners



Planetary Exploration

- Mars
- Solar System

Exploring Other Worlds

- Low-Gravity Bodies
- Full-Capability Near-Earth **Asteroid Missions**
 - Phobos/Deimos

Into the Solar System

- Interplanetary Space
- Initial Near-Earth Asteroid Missions

Gaining the High Ground

 Lunar Flyby & Orbit Lunar Surface

- Cis-Lunar Space
- Geostationary Orbit
- High-Earth Orbit

Initial Exploration Missions

- Space Launch System
- Multi-Purpose Crew Vehicle
- 21st Century Ground Operations

High Thrust In-Space Propulsion Needed

SLS -Going Beyond Earth's Orbit Legend:

Objective

Surface Capabilities Needed

Missions

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SLS Driving Objectives



Safe: Human-Rated

Affordable

- Constrained budget environment
- Maximum use of common elements and existing assets, infrastructure, and workforce
- Competitive opportunities for affordability on-ramps





Initial capability: 70 metric tons (t), 2017–2021

- Serves as primary transportation for Orion and exploration missions
- Provides back-up capability for crew/cargo to ISS

Evolved capability: 130 t, post–2021

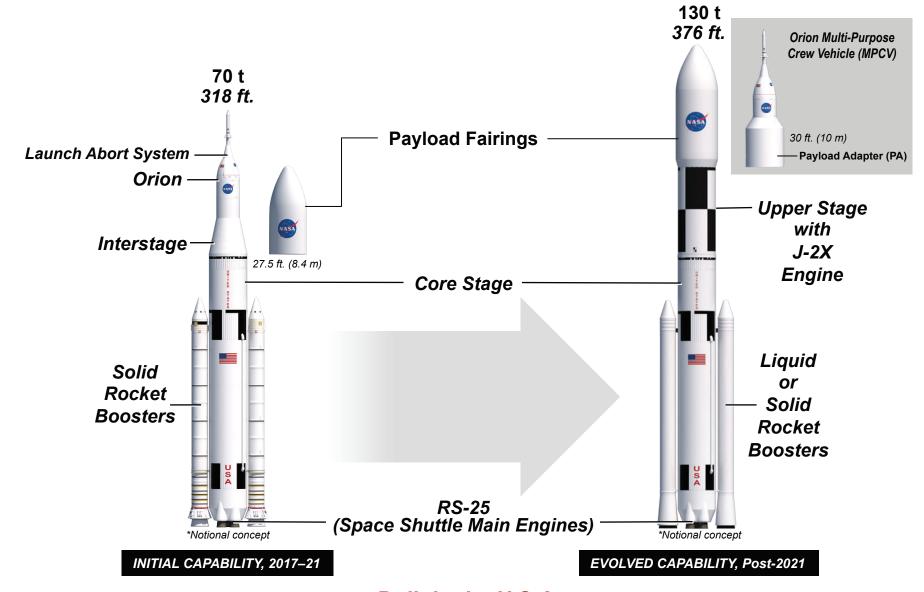
- Offers large volume for science missions and payloads
- Modular and flexible, right-sized for mission requirements



SLS First Flight in 2017

SLS Architecture Uses Existing and Advanced Technologies to Fly in 2017





SLS Maximizes U.S. Aerospace Workforce and Capabilities



♦ Boosters (3-phased approach)

- Phase I: 5-segment Solid Rocket Booster in-scope modification to existing Ares contract with ATK for initial flights through 2021
- · Phases II and III: Advanced Boosters
 - II: Engineering demonstration and risk reduction via NASA Research Announcement (NRA): Full and Open Competition in FY12; award by FY13
 - -III: Design, Develop, Test, & Evaluation (DDT&E): Full and Open Competition (RFP target FY15)

Stages

- Core/Upper Stage: Justification for Other Than Full and Open Competition (JOFOC) to Boeing, modifying current Ares Upper Stage contract
- Instrument Unit Avionics: In-scope modification to existing Ares contract with Boeing; consolidated with Stages contract to Boeing

Engines

- Core Stage Engine: RS-25 JOFOC to existing Space Shuttle contract with Pratt & Whitney Rocketdyne (PWR)
- Upper Stage Engine: J-2X in-scope modification to existing Ares contract with PWR
- Future Core Stage Engine: Separate contract activity to be held in the future

Spacecraft and Payload adapter and Fairing

- Initial design:
 - Adapter and Fairing design and development in-house through early design phase
- Fairing Full and Open Competition planned for FY13



INITIAL

Delivers Near-Term Initial Capabilities and Spurs Competition for Evolved Capabilities

Three-Phase Booster Development Approach



Full and Open Competition



Advanced Booster Design, Development, Test, and Evaluation (DDT&E)

Scope: Follow-on procurement for DDT&E of a new booster

Date: RFP target is FY15Capability: Evolved at 130 t

Contract: Full and Open Competition (Liquids or Solids)

Advanced Booster Engineering Demonstration And/Or Risk Reduction NRA

Full and Open Competition

Scope: Award contracts that reduce risks leading to an affordable Advanced Booster that

meets the evolved capabilities of SLS and enable competition by mitigating targeted

Advanced Booster risks to enhance SLS affordability

• Date: Issue draft NRA Dec 12, 2011; award targeted for Oct 1, 2012

· Capability: Leading to 130 t

Contract: NRA Demonstrating Specific Technologies and Affordability Risk

Reduction for Advanced Boosters

- Liquid Rocket Boosters or Solid Rocket Boosters

Booster Fly-out for Early Flights through 2021

• Scope: Build two 5-segment SRB Flight Sets

Date: In progressCapability: Initial 70–100 t

· Contract: Mod to Ares contract with ATK

Moving Forward from Initial to Evolved Capability

Summary



- SLS is a national capability that empowers entirely new exploration for missions of national importance.
- Program key tenets are safety, affordability, and sustainability.
- SLS builds on a solid foundation of experience and current capacities to enable a timely initial capability and evolve to a flexible heavy-lift capability through competitive opportunities:
 - Reduce risks leading to an affordable Advanced Booster that meets the evolved capabilities of SLS
 - Enable competition by mitigating targeted Advanced Booster risks to enhance SLS affordability and performance
- ◆ The road ahead promises to be an exciting journey for present and future generations, and we look forward to working with you to continue America's space exploration.



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Advancing the U.S. Legacy of Human Exploration





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